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2002 Chevrolet Corvette

DTC P0172 or P0175

Circuit Description

The powertrain control module (PCM) controls the air/fuel metering system in order to provide the best possible combination of driveability, fuel economy, and emission control. Fuel delivery is controlled differently during open and closed loop. During open loop the PCM determines fuel delivery based on sensor signals without oxygen sensor input. During closed loop, the oxygen sensor inputs are added and used by the PCM to calculate short and long term fuel trim fuel delivery adjustments. If the oxygen sensors indicate a lean condition, the fuel trim values will be above 0 percent. If the oxygen sensors indicate a rich condition, the fuel trim values will be below 0 percent. Short term fuel trim values change rapidly in response to the heated oxygen sensor (HO2S) voltage signals. Long term fuel trim makes coarse adjustments in order to maintain an air/fuel ratio of 14.7:1. The fuel trim diagnostic will conduct a test to determine if a rich failure actually exists, or if excessive vapor from the evaporative emission (EVAP) canister is causing a rich condition. If the PCM detects an excessively rich condition, this DTC will set. If the PCM detects excessive vapor, then a pass is logged.

Conditions for Running the DTC

- DTCs P0101, P0103, P0108, P0135, P0137, P0141, P0200, P0300, P0410, P0420, P0430, P0440, P0442, P0443, P0446, P0449, P0506, P0507 or P1441 are not set.
- The engine coolant temperature (ECT) is between 75-115°C (167-239° F).
- The intake air temperature (IAT) is between -20 and +90°C (4-194°F).
- The manifold absolute pressure (MAP) is between 26-90 kPa (3.7-13 psi).
- The vehicle speed is less than 137 km/h (85 mph).
- The engine speed is between 400-3,000 RPM.
- The barometric pressure (BARO) is more than 74 kPa (10.7 psi).
- The mass airflow (MAF) is between 5-90 g/s.
- The fuel level is more than 10 percent.
- The throttle position (TP) is less than 90 percent.

Conditions for Setting the DTC

- The average long term fuel trim value is below -13 percent.
- All of the above conditions are present for 40 seconds.

Action Taken When the DTC Sets

- The control module illuminates the malfunction indicator lamp (MIL) on the second consecutive ignition cycle that the diagnostic runs and fails.
- The control module records the operating conditions at the time the diagnostic fails. The first time the

diagnostic fails, the control module stores this information in the Failure Records. If the diagnostic reports a failure on the second consecutive ignition cycle, the control module records the operating conditions at the time of the failure. The control module writes the operating conditions to the Freeze Frame and updates the Failure Records.

Conditions for Clearing the MIL/DTC

- The control module turns OFF the malfunction indicator lamp (MIL) after 3 consecutive ignition cycles that the diagnostic runs and does not fail.
- A current DTC, Last Test Failed, clears when the diagnostic runs and passes.
- A history DTC clears after 40 consecutive warm-up cycles, if no failures are reported by this or any other emission related diagnostic.
- Clear the MIL and the DTC with a scan tool.

Diagnostic Aids

- Fuel contamination, such as water or alcohol will effect the fuel trim.
- A malfunctioning MAF sensor can cause a rich condition and set this DTC. Refer to DTC P0101 .
- Use a scan tool in order to review the Failure Records. If an intermittent condition is suspected , refer to Intermittent Conditions .

Test Description

The numbers below refer to the step numbers on the diagnostic table.

5. If the conditions were not corrected, refer to Fuel System Diagnosis for a possible fuel problem.
6. An EVAP canister that is saturated will cause a rich condition. Fuel in the vacuum line to the fuel pressure regulator indicates a leaking regulator. If the conditions were not corrected, a worn cam, worn intake or exhaust valves, or other engine mechanical failure may be the problem.

Step	Action	Values	Yes	No
1	Did you perform the Diagnostic System Check-Engine Controls?	--	Go to Step 2	Go to Diagnostic System Check - Engine Controls
2	**Important** If any DTCs other than P0172 are set, refer to those DTCs before continuing. 1. Install a scan tool. 2. Start and idle the engine at the normal operating temperature in closed loop. 3. Record the Long Term Fuel Trim data. 4. Turn OFF the engine.	-13%		

	5. Turn ON the ignition, with the engine OFF. 6. Review the Freeze Frame/Failure Records and record the displayed data for this DTC. Does the scan tool indicate that the Long Term Fuel Trim is less than the specified value?		Go to Step 3	Go to Diagnostic Aids
3	1. Operate the engine at idle. 2. Observe the HO2S parameter with a scan tool. Does the scan tool indicate that the values are within the specified range and fluctuating?	200-800 mV	Go to Step 4	Go to Step 5
4	1. Turn OFF the engine. 2. Visually and physically inspect the following items: ◦ The inlet screen of the MAF sensor for blockage. ◦ The vacuum hoses for splits, kinks, and proper connections. Refer to Emission Hose Routing Diagram ◦ The air intake duct for being collapsed or restricted. ◦ The air filter for being dirty or restricted. ◦ Check for objects blocking the throttle body. Did you find and correct the condition?	--	Go to Step 7	Go to Step 6
5	• Turn OFF the engine • Check the HO2S for proper installation. • Ensure that the electrical connectors and the wires are secure and not contacting the exhaust system. Did you find and correct the condition?	--	Go to Step 7	Go to Fuel System Diagnosis
6	Inspect for the following: • Excessive fuel in the crankcase. • The evaporative emissions control system . • The fuel pressure regulator for proper operation. Refer to Fuel System Diagnosis . • Ensure that all injectors are functioning properly. Refer to Fuel Injector Coil Test . Perform the Fuel Injector Balance Test. Refer to Fuel Injector Balance Test with Special Tool and Fuel	--		Go to Symptoms -

	Injector Balance Test with Tech 2 . Did you find and correct the condition?		Go to Step 7	Engine Mechanical in Engine Mechanical
7	**Important** After any of the above repairs, use the scan tool Fuel Trim Reset function in order to reset the Long Term Fuel Trim. 1. Use the scan tool in order to clear the DTCs. 2. Turn OFF the ignition for 30 seconds. 3. Start the engine. 4. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. Does the DTC run and pass?	--	Go to Step 8	Go to Step 2
8	With a scan tool, observe the stored information, Capture Info. Does the scan tool display any DTCs that you have not diagnosed?	--	Go to Diagnostic Trouble Code (DTC) List	System OK